Compact Formaldehyde Fluorescence Instrument

Completed Technology Project (2013 - 2014)

Project Introduction

The successful completion of this IRAD will deliver a fully functional instrument at TRL 6. The key characteristics that we will demonstrate are simplicity, low cost, small size, and sufficient sensitivity to measure formaldehyde in the troposphere. Our goal is to reduce the size and cost by a factor of three compared to our existing In Situ Airborne Formaldehyde (ISAF) instrument while sacrificing a factor of ten in sensitivity. To maximize the value of this IRAD, we plan on testing the instrument on an aircraft. Our target flight opportunity will be the Atlas jet operated at NASA Ames. The Ames AJAX project (Atlas Jet Atmospheric eXperiment) is designed to validate OCO-2 with weekly flights. The same flights can be used for validating OMI on Aura and TEMPO (the recently selected Venture-1) by including measurements of formaldehyde, ozone, and CO.

Anticipated Benefits

As a consequence, formaldehyde is a primary measurement objective in two proposed missions of the Decadal Survey (GEO-CAPE and GACM) and the first funded Venture-Instrument (TEMPO). These missions will require NASA airborne in situ measurements of formaldehyde from the ground to the lower stratosphere to determine measurement and science requirements, develop retrieval algorithms and for validation. For example, both the Venture suborbital DISCOVER-AQ and the HQ-directed SEAC4RS campaigns target formaldehyde as a primary objective to validate and extend the measurements made by the OMI instrument on Aura.

Primary U.S. Work Locations and Key Partners

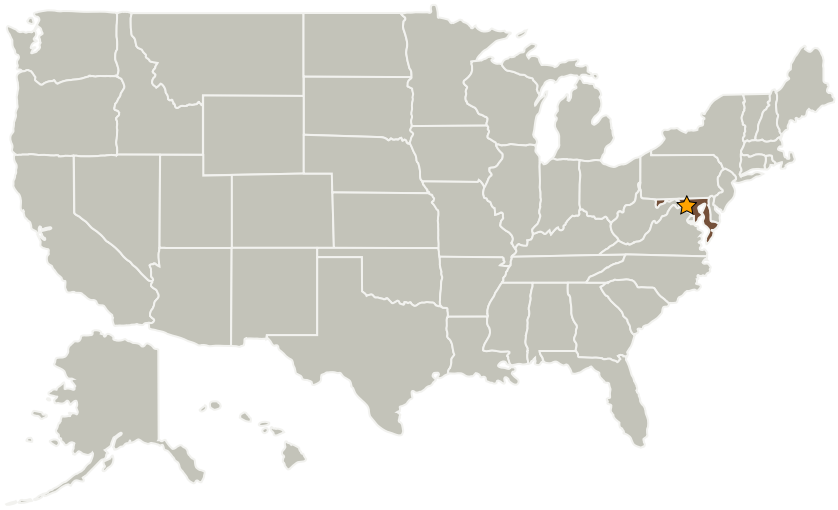

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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Project Management

Program Manager:

Peter M Hughes

Project Manager:

Matthew J Mcgill

Co-Investigator:

Steven A Bailey

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors